

MAGNETIC TUNNELING JUNCTION ANTIFUSE DEVICERelated Applications

[0001] This application is a divisional application of U.S. Application No. 10/225,570 filed August 20, 2002, ^{now Patent No. 6,751,144} which was a non-provisional of U.S. Provisional Application No. 60/367,673, filed on March 22, 2002, entitled "MAGNETIC TUNNELING JUNCTION ANTIFUSE DEVICE" which applications are hereby incorporated by reference in their entirety herein.

Background of the InventionField of the Invention

[0002] The present invention relates to semiconductor processing technology and, in particular, concerns a device and a fabrication process whereby a Magnetoresistive Random Access Memory (MRAM) structure can be used as a selectively programmable antifuse device.

Description of the Related Art

[0003] Since the introduction of the digital computer, electronic storage devices have been a vital resource for the retention of binary data. Conventional semiconductor electronic storage devices incorporate capacitor type structures, which are referred to as Dynamic Random Access Memory (DRAM), that temporarily store binary data based on the charged state of a capacitor. This type of semiconductor Random Access Memory (RAM) requires a continuous supply of power and a periodic charge refresh to maintain a particular defined logic-state. As a result, semiconductor RAM is considered volatile memory due to the fact that data can be lost with the loss of power. For many applications, it may be desirable to replace traditional volatile memory with an improved solid-state non-volatile memory device. This need has fueled research and development in the area of non-volatile memory storage devices while still maintaining a high-density fabrication process